

## **REMARKS**

Claims 1-48 are pending in the application. Claims 12-20, and 36-38 stand allowed. (Claim 33 was listed as allowed in the office action, but was a dependent claim and has therefore been considered to be objected to.) Claims 3, 22, 25, 33, and 42-45 stand objected to. Claims 1, 2, 4-11, 21, 23, 24, 26-32, 34, 35, 39-41 and 46-48 stand rejected. Claims 11, 21, and 48 were cancelled. Claims 1, 3-4, 6, 10, 22-26, 33, 35, 40, and 42-47 have been amended. Claims 49-57 have been added. Claims 1-10, 12-20, 22-47, and 49-57 remain in the application.

### **Drawings**

The drawings stood objected to under 37 CFR 1.83(a). The rejection indicated that the limitations of Claims 4, 5, 18, and 19 were not shown. A proposed drawing correction is enclosed: added Figure 8. The specification has been amended to discuss Figure 8, in accord with Claims 4-5 and 18-19.

### **Allowable Subject Matter**

In the office action, Claims 12-20, 33, and 36-38 were deemed allowable over the prior art of record.

Claim 33, as earlier noted, was a dependent claim and has been rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 3, 22, 25, and 42-45 stood objected to as being dependent upon a rejected base claim, but allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 3, 22, 25, and 42-45 have been so rewritten.

Claims 4-6 and 46 were amended to depend from Claim 3 and are allowable on that basis.

### **Claim Rejection - 35 USC § 102: Park**

Claims 1, 2, 6, 8, 10, 11, 21, 23, 24, and 46-48 stood rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,714,753 to Park. The rejection stated:

"In regards to claim 1 Park discloses an image capture system for generating an extended effective dynamic range from a signal provided by an image sensor, said image capture system comprising:

"an image sensing device having standard photosites (e.g., element 22 of Fig. 3) with a predetermined response to a light exposure and a non-standard photosites (e.g., element 24 of Fig. 3) with a slower response to the same light exposure (e.g., the photodiode 24 is smaller, therefore it has a slower response to the same light exposure);

"an optical section for exposing the image sensing device to image light, thereby causing the image sensing device to generate an image signal (e.g., the claimed optical section is inherent with a camera); and a processing section for expanding the response of the standard photosites to increased light exposures by utilizing the image signals from neighboring non-standard photosites (e.g., the processing section is the pixel and its peripheral control logic, wherein as shown in Fig. 5 an expanded response of the standard photosites to increased light exposures is created by utilizing the image signals from neighboring non-standard photosites; column 4, lines 1-21).

"In regards to claim 2 Park discloses the image capture system as claimed in claim 1 wherein the processing section expands the response of the non-standard photosites to decreased light exposures by utilizing the image signals from neighboring standard photosites (e.g., when the response of the photodiodes 22 is on the curve f of Fig. 5 then the response of the nonstandard photosites is expanded by the response of the standard photosites, namely the response of the standard photosites is used for the pixel value).

"In regards to claim 6, Examiner notes that it is implicit in the Park reference that the image sensor is in a digital camera, wherein, as stated above, the processing section is in the image sensor.

"In regards to claim 8 Examiner notes that Park does not disclose any color filters, therefore the image sensor would be monochromatic.

"In regards to claims 10 and 11 see Examiners notes on the rejection of claims 1 and 2.

"In regards to claim 21 see Examiners notes on the rejection of claims 1 and 2.

"In regards to claims 23 and 24 see Examiners notes on the rejection of claims I and 2.

"In regards to claim 46 note that the nearest photosite with the same color does not have the same response as the given photosite as shown in Fig. 3. For example, the top pixel in Fig. 3 the nearest photosite to photodiode 22 is photodiode 24.

"In regards to claims 47 and 48 see Fig. 3. Note that Park's invention is a CCD wherein the image sensor depicted in Fig. 3 would be expanded two-dimensionally."

Claims 11, 21, and 48 were cancelled.

Claims 6 and 46, as noted above, were amended to depend from Claim 3 and are allowable on that basis.

Claim 1 has been amended to state:

1. An image capture system for generating an extended effective dynamic range from a signal provided by an image sensor, said image capture system comprising:

an image sensing device having standard photosites with a predetermined response to a light exposure and non-standard photosites with a slower response to the same light exposure;

an optical section exposing the image sensing device to image light, thereby causing the image sensing device to generate an image signal;

an additional section receiving said image signal;

a processing section expanding the response of the standard photosites to increased light exposures by utilizing signals from neighboring non-standard photosites; and

a controller having a normal mode and an expanding mode, said controller in said normal mode diverting said signal directly to said additional section, said controller in said expanding mode diverting said image signal through said processing section to said additional section.

Claim 1 is supported by the application as filed, notably, the original claims; Figure 1; and at page 5, lines 14-25; page 7, lines 12-14; and page 10, lines 24-27.

Claim 1 requires a controller having a normal mode and an expanding mode, the controller in the normal mode diverting the signal directly to

the additional section, the controller in the expanding mode diverting the image signal through the processing section to the additional section. (Added Claim 49 adds the feature that the additional section is a color filter array interpolator.) The rationale for providing the two modes is discussed in the specification:

"Thus, the processing performed by the DREFA processor 22 is a method by which the spatial resolution of the image sensing device 10 may be traded for dynamic range of the image sensing device 10." (application, page 5, lines 18-21; also see generally page 5, lines 14-23).

Where are the features of Claim 1 disclosed or suggested in the cited references?

Claims 2, 8, 47, and 49-52 are allowable as depending from Claim 1 and as follows.

Claim 47 states:

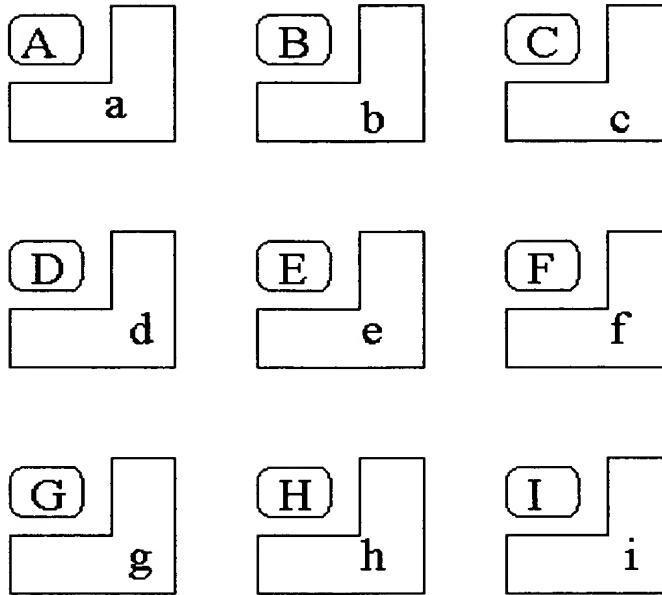
47 (currently amended). The image capture system as claimed in claim 1, wherein the photosites are arranged such that the four photosites constituting the nearest neighbors of a given non-standard photosite comprise four standard photosites and the four photosites constituting the nearest neighbors of a given standard photosite comprise four nonstandard photosites.

Claim 47 is supported by the application as filed, notably, original claims 47-48 and Figure 3A.

The rejection citing Park stated:

"In regards to claims 47 and 48 see Fig. 3. Note that Park's invention is a CCD wherein the image sensor depicted in Fig. 3 would be expanded two-dimensionally."

The drawing on the next page is a two dimensional expansion of the image sensor depicted in Figure 3 of Park. The array is uniform in both dimensions, such that, the distance between A and B is equal to the distance between A and D and the distance between a and b is equal to the distance between a and d.



In this drawing, the closest four neighbors to the standard photosite e are the nonstandard photosite E and any three of the standard photosites: d, b, f, and h (all are at the same distance from e). Claim 47 requires that the nearest neighbors of a given standard photosite comprise four nonstandard photosites.

Claims 49-52 state:

49 (new). The image capture system as claimed in claim 1 wherein said additional section is a color filter array interpolator.

50 (new). The image capture system as claimed in claim 1 wherein said controller is disposable in each of said modes responsive to user input.

51 (new). The image capture system as claimed in claim 1 wherein said controller is disposable in each of said modes as a function of dynamic range of said image signal.

52 (new). The image capture system as claimed in claim 1 wherein said controller is permanently set in said expanding mode.

Claims 49-52 are supported by the application as filed, in the same manner as Claim 1.

Claims 49-52 relate to the additional section (Claim 49) and the controller (Claims 50-52). Where are these features disclosed or suggested in the cited references?

Claim 10 states:

10. An image capture system for generating an extended effective dynamic range from a signal provided by an image sensor, said image capture system comprising:

an image sensing device having standard photosites with a predetermined response to a light exposure and non-standard photosites with a slower response to the same light exposure;

a color filter array comprised of two or more colors overlying the photosites, said standard and non-standard photosites being associated with each color of the array;

an optical section for exposing the image sensing device to image light, thereby causing the image sensing device to generate an image signal; and

a processing section expanding the response of the standard photosites of each color to increased light exposures by utilizing the image signals from neighboring non-standard photosites of the same color at least two lines removed from the corresponding standard photosite and expanding the response of the non-standard photosites of each color to decreased light exposures by utilizing the image signals from neighboring standard photosites of the same color at least two lines removed from the corresponding non-standard photosite.

Claim 10 is supported by the application as filed, notably, original Claims 10, 31, and 33. Claim 10 is allowable on the same grounds as Claim 33.

Claim 23 states:

23. A method for generating an extended effective dynamic range from a signal provided by an image sensor, said method comprising the steps of:

generating image signals from an image sensing device having standard photosites with a predetermined standard response to a light exposure and non-standard photosites with a slower response to the same light exposure;

setting one of an expanding mode and a normal mode;  
in said expanding mode, expanding the dynamic range of selected photosites to extreme exposures by utilizing the image signals

from neighboring photosites having a response, either standard or non-standard, opposite to that of the selected photosites; and

in said normal mode, transmitting said image signals without said expanding.

Claim 23 is supported and allowable on grounds like those discussed above, in relation to Claim 1. Claim 23 requires setting one of an expanding mode and a normal mode, and, in the expanding mode, expanding the dynamic range of selected photosites to extreme exposures by utilizing the image signals from neighboring photosites having a response, either standard or non-standard, opposite to that of the selected photosites, and in the normal mode, transmitting the image signals without the expanding. Where is this disclosed in the cited references?

Claim 24 states:

24. The method as claimed in claim 23 wherein said expanding the dynamic range comprises expanding the response of the standard photosites to increased exposures by utilizing the image signals from neighboring non-standard photosites and expanding the response of the non-standard photosites to decreased exposures by utilizing the image signals from neighboring standard photosites.

Claim 24 is supported by the application as filed, notably, the original claims.

Claim 24 is allowable as depending from Claim 23.

Added Claims 53-54 state:

53. The method as claimed in claim 23 wherein said setting is responsive to user input.

54. The method as claimed in claim 23 wherein said setting is a function of dynamic range of said image signals.

Claims 53-54 are allowable as depending from Claim 23 and are supported and allowable on the grounds discussed above in relation to Claims 50-51.

Claims 1, 2, 8, 10, 11, 21, 23, 24, 26-30, 34, 46, and 48 stood rejected under 35 U.S.C. 102(a) as being anticipated by ("High Dynamic Range Imaging: Spatially Varying Pixel Exposures" by Shree K. Nayar and Tomoo Mitsunaga. Proceedings IEEE Conference on Computer Vision and Pattern Recognition, Vol. I, pp. 472-479), (hereafter "Nayar". The rejection stated:

"In regards to claim 1 Mayar discloses an image capture system for generating an extended effective dynamic range from a signal provided by an image sensor, said image capture system comprising:

"an image sensing device having standard photosites (e.g., photosite e3 depicted in Fig. 1, note the first paragraph of section 3 on page 473) with a predetermined response to a light exposure and a non-standard photosites (e.g., elements e0-e2 of Fig. 1) with a slower response to the same light exposure;

"an optical section for exposing the image sensing device to image light, thereby causing the image sensing device to generate an image signal (e.g., the claimed optical section is inherent with a camera); and

"a processing section for expanding the response of the standard photosites to increased light exposures by utilizing the image signals from neighboring non-standard photosites (e.g., see section 6.2).

"In regards to claim 2 Mayar discloses the image capture system as claimed in claim 1 wherein the processing section expands the response of the non-standard photosites to decreased light exposures by utilizing the image signals from neighboring standard photosites (e.g., see Fig. 6, paragraph 4 of section 7 on page 476).

"In regards to claim 8 not that Maya does not disclose any color filters, therefore the photosites are monochromatic.

"In regards to claims 10 and 11 see Examiners notes on the rejections of claims 1 and 2.

"In regards to claim 21 see Examiners notes on the rejections of claims 1 and 2.

"In regards to claims 23 and 24 see Examiners notes on the rejections of claims 1 and 2.

"In regards to claim 26 Mayar discloses an image sensor for generating an image signal with a differential response to image light, said image sensor comprising:

"an array of photosites divided into standard photosites and non-standard photosites (e.g., Fig. 1); and

"a structural element overlying the photosites and providing the standard photosites with a predetermined standard response to a light

exposure and the non-standard photosites with a slower response to the same light exposure (e.g., paragraph 3 of section 3 on page 473).

"In regard to claim 27 Examiner notes that Mayar discloses "the sensitivity of the pixels can be preset by using different microlenses on the array (page 473)".

"In regards to claim 28 Examiner notes that Mayar discloses "the sensitivity of the pixels can be preset by ... embedding different apertures for the potential wells of the pixels (page 473)".

"In regards to claim 29 Examiner notes that Mayar discloses "One approach is to place a mask with cells of different optical transparencies adjacent to the detector array (page 473)".

"In regards to claim 30 see Examiners notes on the rejections above.

"In regards to claim 34 Examiner notes that is inherent to place the CCD described by Mayar in a digital camera.

"In regards to claims 46 and 48 see Fig. 1.

Claims 11, 21, and 48, as noted above, were cancelled.

Claim 46, as noted above, was amended to depend from Claim 3 and are allowable on that basis.

Claims 1-2, 8, 10, and 23-24 are allowable on the grounds discussed above in relation to the rejection citing Park.

Claim 26 states:

26. An image sensor for generating an image signal with a differential response to image light, said image sensor comprising:

an array of photosites divided into standard photosites and non-standard photosites; and

a structural element overlying the photosites and providing the standard photosites with a predetermined standard response to a light exposure and the non-standard photosites with a slower response to the same light exposure;

wherein the photosites are arranged such that the four photosites constituting the nearest neighbors of a given non-standard photosite comprise four standard photosites and the four photosites

constituting the nearest neighbors of a given standard photosite comprise four nonstandard photosites.

Claim 26 is supported in the same manner as Claim 47. Claim 47 was not subject to the rejection citing Nayar and Claim 26 is likewise allowable over the rejection.

Claims 27-30 and 34 are allowable as depending from Claim 26.

### **Claim Rejections - 35 USC § 103**

Claims 7, 9, and 39-41 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,714,753 to Park. The rejection stated:

"In regards to claim 7 Park does not explicitly disclose that the non-standard photosites have a response that is slower by at least one stop compared to the standard photosites. Examiner notes that it would have been obvious to one of ordinary skill in the art at the time of the invention to have defined the differences in photosite response in terms of a number of "stops" since such a definition is well known in the photography art to describe exposure values. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a response of the non-standard (slower response) photosites of Park to be slower by at least one stop compared to the standard photosites in order to generate a difference in exposure response between the standard and non-standard photosites and thus extend the dynamic range of the pixel as taught by Park.

"In regards to claim 9 Examiner notes that it is extremely well known in the art to provide a color filter so as to produce a color image. Official notice is taken. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have added a color filter to Park's invention in order to generate a color image. Examiner notes that Park discloses each pixel has two photosites, wherein by adding the color filter the standard and non-standard photosites would be of the same color.

"In regards to claim 39 see Examiners notes on the rejection of claim 9. Note that the nearest photosite with the same color does not have the same response as the given photosite. For example, in applying a color filter to the top pixel in Fig. 3 the nearest photosite with

the same color to photodiode 22 is photodiode 24, which has the same color as discussed above.

"In regards to claim 40 see Examiners notes on the rejection of claim 9. Park discloses the image capture system as claimed in claim 1, wherein the photosites are arranged such that the four photosites constituting the nearest neighbors of a given non-standard photosite comprise two standard photosites and two nonstandard photosites (e.g., see Fig. 3. Note that Parks invention is a CCD image sensor as disclosed in the background on column 1, lines 8-10, wherein thus be extended two-dimensionally).

"In regards to claim 41 see Examiners notes on claim 40."

Claims 7, 9, and 39 are allowable as depending from Claim 1.

Claim 40 states:

40. An image capture system for generating an extended effective dynamic range from a signal provided by an image sensor, said image capture system comprising:

an image sensing device having standard photosites with a predetermined response to a light exposure and non-standard photosites with a slower response to the same light exposure;

an optical section exposing the image sensing device to image light, thereby causing the image sensing device to generate an image signal; and

a processing section expanding the response of the standard photosites to increased light exposures by utilizing the image signals from neighboring non-standard photosites;

wherein the photosites are color photosites and are arranged such that the four photosites constituting the nearest neighbors of a given non-standard photosite comprise two standard photosites and two nonstandard photosites.

Claim 40 is supported by the application as filed, notably original Claims 1 and 40. Claim 40 has been rewritten as an independent claim, incorporating language similar to and at least as broad as original Claim 1. A typographical error was corrected in the last word of the claim.

The rejection stated:

"In regards to claim 40 see Examiners notes on the rejection of claim 9. Park discloses the image capture system as claimed in claim 1, wherein the photosites are arranged such that the four photosites constituting the nearest neighbors of a given non-standard photosite comprise two standard photosites and two nonstandard photosites (e.g., see Fig. 3. Note that Parks invention is a CCD image sensor as disclosed in the background on column 1, lines 8-10, wherein thus be extended two-dimensionally)."

Claim 40 requires that the four photosites constituting the nearest neighbors of a given non-standard photosite comprise two standard photosites and two nonstandard photosites. As the drawing above shows, in a two dimensional expansion of Park, the four nearest neighbors of a nonstandard photosite are four standard photosites. In the above drawing, site E is closest to site e, followed by sites b and d (at equal distances), and then followed by site a.

Claim 41 is allowable as depending from Claim 40 and as follows.  
Claim 41 states:

41. The image capture system as claimed in claim 40, wherein the photosites are color photosites and are arranged such that the four photosites constituting the nearest neighbors of a given standard photosite comprise two standard photosites and two nonstandard photosites.

Claim 41 requires that the four photosites constituting the nearest neighbors of a given standard photosite comprise two standard photosites and two nonstandard photosites. In the two dimensional expansion of Park, the closest four neighbors to the standard photosite e are the nonstandard photosite E and any three of the standard photosites: d, b, f, and h (all are at the same distance from e).

Claims 4-7, 31, and 32 stand rejected under 35 U.S.C. 103(a) as being obvious over "High Dynamic Range Imaging: Spatially Varying Pixel Exposures" by Shree K. Nayar and Tomoo Mitsunaga. Proceedings IEEE Conference on Computer Vision and Pattern Recognition, Vol. I, pp. 472-479 (Nayar). The rejection stated:

"In regards to claim 4 Mayar does not explicitly disclose where the processing takes place. Examine notes that it is extremely well known to perform image processing functions on an external computer so

as to reduce the number of parts needed on the digital camera and have access to higher processing power. Official notice is taken. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have had the processing section in a host computer separate from the digital camera in order to reduce the number of parts needed on the digital camera and have access to higher processing power.

"In regards to claim 5 see Examiners notes on the rejection of claim 4. Note that it is further well known in the art to provide remote access to computers and/or servers from a digital camera in order to reduce the number of parts needed on the digital camera and have access to higher processing power, while at the same time not be constrained to being in close proximity to the computer/server. Official notice is taken. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have enabled the processor to be accessed via a network in order to enable remote control of processor without being constrained to being in close proximity to the computer/server.

"In regards to claim 6 Mayar does not explicitly disclose where the processing takes place. Examine notes that it is extremely well known to have all of the processing for a camera to be done in the camera so as to enable a camera to be portable and independent from any external computer. Official notice is taken. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have had the processing section included in the digital camera.

"In regards to claim 7 Mayar does not explicitly disclose that the non-standard photosites have a response that is slower by at least one stop compared to the standard photosites. Examiner notes that it would have been obvious to one of ordinary skill in the art at the time of the invention to have defined the differences in photosite response in terms of a number of "stops" since such a definition is well known in the photography art to describe exposure values. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a response of the non-standard (slower response) photosites of Park to be slower by at least one stop compared to the standard photosites in order to generate a difference in exposure response between the

standard and non-standard photosites and thus extend the dynamic range of the pixel as taught by Park.

"In regards to claim 31 Examiner notes that it is extremely well known in the art to provide a color filter so as to produce a color image. Official notice is taken. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have added a color filter to Park's invention in order to generate a color image.

"In regards to claim 32 Examiner notes that it is extremely well known to use a Bayer color filter so as to generate more data for the green color plane. Official notice is taken. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have used a Bayer color filter in order to generate more data for the green color plane."

Claims 4-6, as earlier noted, were amended to depend from Claim 3 and are allowable on that basis.

Claim 7 is allowable as depending from Claim 1.

Claims 31-32 are allowable as depending from Claim 26.

Claim 35 stands rejected under 35 U.S.C. 103(a) as being unpatentable over "High Dynamic Range Imaging: Spatially Varying Pixel Exposures" by Shree K. Nayar and Tomoo Mitsunaga. Proceedings IEEE Conference on Computer Vision and Pattern Recognition, Vol. I, pp. 472-479 (Nayar) in view of U.S. Patent No. 5,714,753 to Park (Park). The rejection stated:

"In regards to claim 35 Examiner notes that Mayar discloses using different microlenses on the array but does not explicitly disclose that standard photosites would have microlenses and non-standard photosites would not. Park discloses the use of a microlens to focus light onto photodiode 22 in order to increase the response of photodiode 22 as compared to photodiode 24 (column 2, lines 54-57). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have not used a microlens on non-standard photosite e0 depicted in Fig. 1 as suggested by Park and to have used different microlenses for photosites e1-e3 as suggested by Mayar in order to reduce the number of microlenses needed to be formed on the image sensor."

Claim 35 states:

35. An image sensor for generating an image signal with a differential response to image light, said image sensor comprising:

an array of photosites divided into standard photosites and non-standard photosites; and

a structural element overlying the photosites and providing the standard photosites with a predetermined standard response to a light exposure and the non-standard photosites with a slower response to the same light exposure;

wherein the structural element comprises an array of lenslets overlying the standard photosites, and the non-standard photosites are not overlayed with lenslets.

Claim 35 has been rewritten as an independent claim.

The rejection says that it would have been obvious to one of ordinary skill in the art at the time of the invention to have used different microlenses for different photosites in order to reduce the number of microlenses needed to be formed on the image sensor. U.S. Patents Nos. 6,163,407; 6,083,429; 6,137,634; 6,122,109, which are included in a supplemental information disclosure filed concurrently with this amendment, describe manufacturing of microlens arrays. These patents indicate that microlens arrays are or can be made in a manner similar to the photolithography of integrated circuit chips. Where would there be an advantage to reducing the number of microlenses?

Added Claim 55 states:

55. An image capture system for generating an extended effective dynamic range from a signal provided by an image sensor, said image capture system comprising:

an image sensing device having standard photosites with a predetermined response to a light exposure and non-standard photosites with a slower response to the same light exposure;

an optical section exposing the image sensing device to image light, thereby causing the image sensing device to generate an image signal;

a Bayer color filter array overlying the photosites, said standard and non-standard photosites being associated with each color of the array; and

a processing section expanding the response of the standard photosites to increased light exposures by utilizing the image signals from neighboring non-standard photosites;

wherein the photosites are arranged such that the eight photosites constituting the nearest neighbors of a given photosite which is red in color comprise two non-standard photosites which are green in color, two standard photosite which are green in color, two standard photosites which are blue in color, and two non-standard photosites which are blue in color.

Claim 55 is supported by the application as filed, notably, the original claims.

Claim 55 is allowable on the same basis as Claim 44.

Claim 56 states:

56. An image capture system for generating an extended effective dynamic range from a signal provided by an image sensor, said image capture system comprising:

an image sensing device having standard photosites with a predetermined response to a light exposure and non-standard photosites with a slower response to the same light exposure;

an optical section exposing the image sensing device to image light, thereby causing the image sensing device to generate an image signal;

a Bayer color filter array overlying the photosites, said standard and non-standard photosites being associated with each color of the array; and

a processing section expanding the response of the standard photosites to increased light exposures by utilizing the image signals from neighboring non-standard photosites;

wherein the photosites are arranged such that the eight photosites constituting the nearest neighbors of a given photosite which is blue in color comprise two non-standard photosites which are green in color, two standard photosite which are green in color, two standard

photosites which are red in color, and two non-standard photosites which are red in color.

Claim 56 is supported by the application as filed, notably, the original claims.

Claim 56 is allowable on the same basis as Claim 45.

Claim 57 states:

57. An image capture system for generating an extended effective dynamic range from a signal provided by an image sensor, said image capture system comprising:

an image sensing device having a uniform two-dimensional array of photosites, including standard photosites with a predetermined response to a light exposure and non-standard photosites with a slower response to the same light exposure;

an optical section exposing the image sensing device to image light, thereby causing the image sensing device to generate an image signal; and

a processing section expanding the response of the standard photosites to increased light exposures by utilizing the image signals from neighboring non-standard photosites and expanding the response of the non-standard photosites to decreased light exposures by utilizing the image signals from neighboring standard photosites;

wherein the photosites are color photosites and the neighboring non-standard photosites are of the same color as standard photosite being processed by the processing section.

Claim 57 is supported by the application as filed, notably, the original claims.

Claim 57 requires that the image sensing device has a uniform two-dimensional array of photosites and that the photosites are color photosites and neighboring non-standard photosites are of the same color as standard photosite being processed by the processing section. Park does not have a uniform array of photosites nor a two-dimensional array. Nayar has a uniform two dimensional array. Neither Park nor Nayar has neighboring non-standard photosites of the same color as the standard photosite. (It is worth noting that, in Nayar if the four photosites of a repeating unit all had the same color, then the color information would be sampled much differently than the intensity information.)

It is believed that these changes now make the claims clear and definite and, if there are any problems with these changes, Applicants' attorney would appreciate a telephone call.

In view of the foregoing, it is believed none of the references, taken singly or in combination, disclose the claimed invention. Accordingly, this application is believed to be in condition for allowance, the notice of which is respectfully requested.

Respectfully submitted,



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Enclosures: New Drawing Figure 8  
Supplemental Information Disclosure Statement  
PTO-1449  
Copies of cited references